Session Title:	**Track 3: Fall Protection Implementation Strategies** **Position 1: Motivational and Training Program**
Presentation Title:	**Passionate People - Are They the Missing Link?**
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ABSTRACT

Any reasonable review of industrial personal damage will demonstrate that gravitational energy – falls of people is over-represented. Whether one is contemplating the construction, mining, agricultural or health industries etc, the conclusion is similar – gravity dominates. Why? Is it that we don't have the necessary resources? Is it the absence of skills? Is it the unavailability of quality information? Is it an absence of a systematic approach to managing work and work related issues?

The paper will suggest that the above are critical components in any approach to damage reduction and that the quality of information available with respect to such aspects is excellent. But then why does the size of the problem at a societal level for developed countries not diminish? Why has the effective management of gravitational energy not been achieved through the body of intellectual knowledge and demonstrated management behaviours.

Perhaps what is missing are issues of the heart. Leaders who have strong feelings, passion and vision and are able to inspire and lead. Leaders and others who are strongly motivated because of the compassion they feel for people who are damaged. Harper (1994) writes "perception has to be raised by imagination (and passion) to vision."

Progress will require the following: Leaders at all levels of our society who perceive the size and nature of the problem, who perceive that assigning blame is a simplistic and non-useful, whose imagination is stirred to believe that this gravitational problem is able to be eliminated, who have a vision for workplaces free from permanent damage due to gravity. Then others will be inspired to translate that vision into reality.

The heart must couple with the hands and the head for progress.

I. Introduction

On a hot August afternoon in 1963 Reverend Martin Luther King stated "I HAVE A DREAM". It was a speech on civil rights which inspired, motivated and raised passions. We gather here at a Conference to explore issues of gravity at an International level. There will be technical review, experimental results disseminated, new equipment displayed etc. All are very necessary but do we individually and collectively have a dream which motivates, inspires and challenges ourselves and others? Can we express our dream in the form of a visionary statement which stirs the emotions, the spirit and the thinking of ourselves and those whom we touch? Can we believe in the possible realisation of that vision in our own or succeeding generations? If the vision exists, does it inspire and motivate those entering this field of endeavour? Harper (1994) wrote "Perception will be raised by Imagination to Vision."

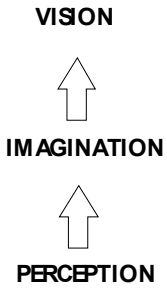


Figure 1

The model can be expanded. Vision, when linked with Passion can stir the Imagination of the hearer, alter their perception and produce Action which increases the reality, the tangibility of the Vision (**Figure 2**).

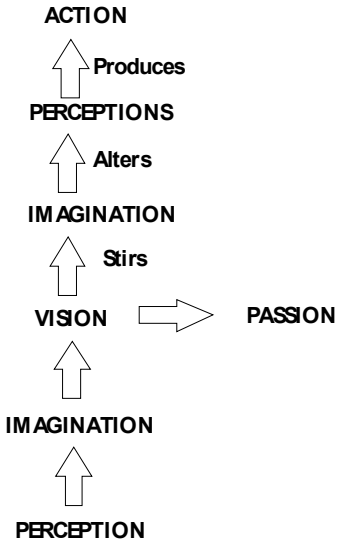


Figure 2

For the purposes of this paper, the above model (**Figure 2**) is set in the context of current knowledge, information and skills which, at one end of the spectrum, may have the potential to reduce personal damage or, at the other end, maintain or increase damage levels.

To make progress, we need to extend our world view, to alter our perceptions which interpret the incoming sensory data to give us a meaningful representation of external events. McDonald[1] puts it this way:

Neuro Linguistic Programmers would argue that the filters delete, distort and generalise. Some of these filters operate in the unconscious, eg. metaprograms (way people operate), values, beliefs, memory and emotion while others operate in the conscious from information through the senses to thoughts, attitudes and language. Some idea of our own and other people's filters can help reduce distortion and improve the quality of perception.

To make progress, we need to allow our imaginations to be stirred once we understand our own and others' perceptions.

II. Perception

Perceptual psychologists describe two processes - "Bottom Up" and "Top Down". Bottom Up processes describe that incoming sensory data eg. visual, tactile, auditory, while Top Down processes represent those interpretative mechanisms which are applied to the incoming data to allow meaningful interpretation.

The final percept is an interplay between "Bottom Up" and "Top Down". The final percept is altered by expectation, memory, training, one's goals and models. These models are the conceptual frameworks which allow for the organisation of information to allow relevancies to be observed. The neo cortex is described by Goleman[2] as "*that part of the brain which takes in and makes sense of what is being perceived*". He further goes on to describe the Amygdala as the specialist area for emotional matters. If it is severed from the rest of the brain, the result is a striking inability to gauge the emotional significance of events sometimes called "Effective Blindness". The following **Figure 3** illustrates.

A visual signal first goes from the retina to the thalamus, where it is translated into the language of the brain. Most of the message then goes to the visual cortex, where it is analysed and assessed for meaning and appropriate response; if that response is emotional, a signal goes to the amygdala to activate the emotional centres. But a smaller portion of the original signal goes straight from the thalamus to the amygdala in a quicker transmission, allowing a faster (though less precise) response. Thus the amygdale can trigger an emotional response before the cortical centres have fully understood what is happening.

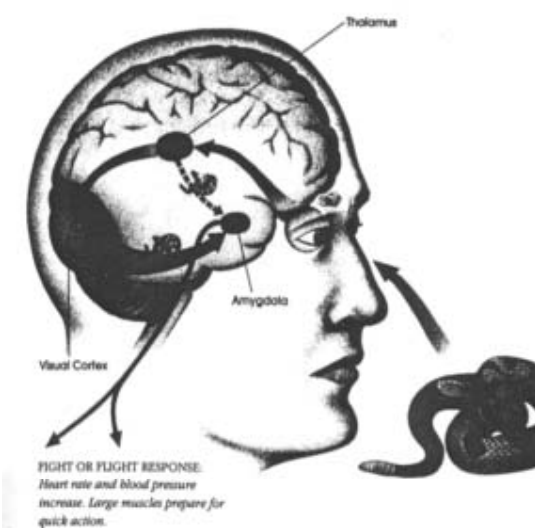


Figure 3

The largest proportion of our incoming data is directed towards the neo cortex. The amygdala is the seat of passion. Emotions have a vital part to play in the interpretive role of sensory data. Our emotions can block the perception of information. Therefore, when

looking at the problem of personal damage from Gravitational Energy, it is necessary to comment on the Bottom Down process and the effect of the emotional over-lap.
What is the size of the Gravitational Problem? Many people will testify to the size of the problem. Damage can be classified as -

- Permanent (multiple fatality, single fatality, non-fatal permanent damage);
- Temporary;
- Minor; and
- No damage.

Which category of personal damage represents the greatest level of physical, emotional, social and economic cost? Increasingly authors are recognising that the cost of non-fatal permanent damage is by far the greatest. The Australian Industry Commission's report of 1992/93 describes the damage to 396,522 as set out in Table I.

TABLE I.

Severity of Damage	Percent of Damaged People	Percent of Cost
Fewer than 5 days off work	36.33	0.67
More than 5 days off work, on return -		
S Immediate full work	31.12	5.28
S Graded to full work	19.75	11.99
S Never back to full work	7.74	22.62
Did not return to work	4.86	57.93
Fatal	0.17	1.48
TOTAL	396,522	$20 Billion

Our perception should begin to be challenged as to which group of people do we ascribe the highest priority with our available resources but we are in danger of 'bending over to recover a dime off the pavement when $100 bills are blowing out of our pocket'.

But what do our Top Down processes do with the above data? We create a phenomenon called the Incident Triangle and change what is a "descriptive" statistic into an "inferential" statistic, as illustrated in **Figure 4**[3].

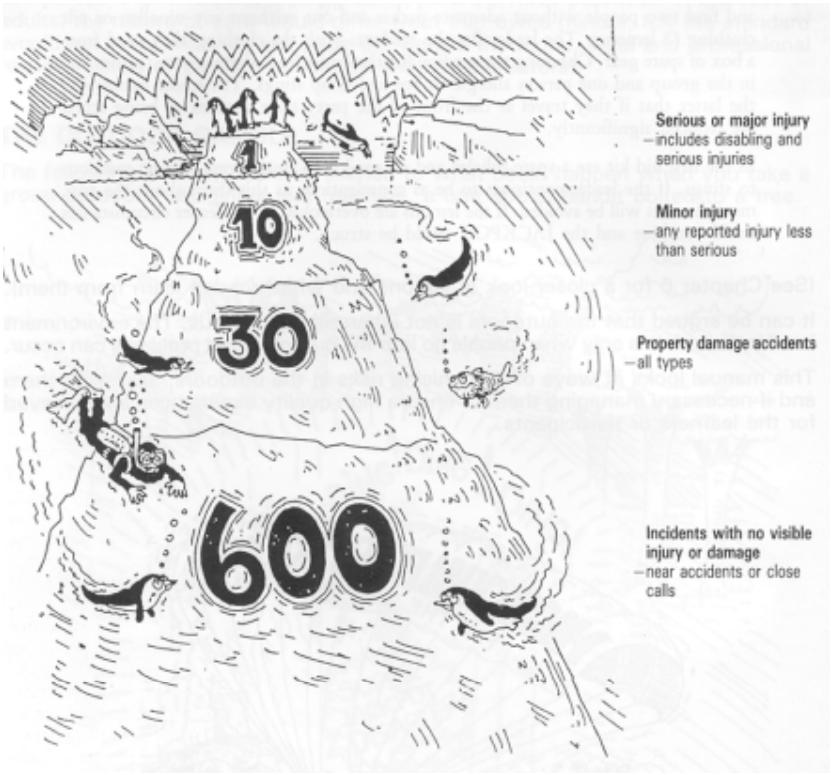
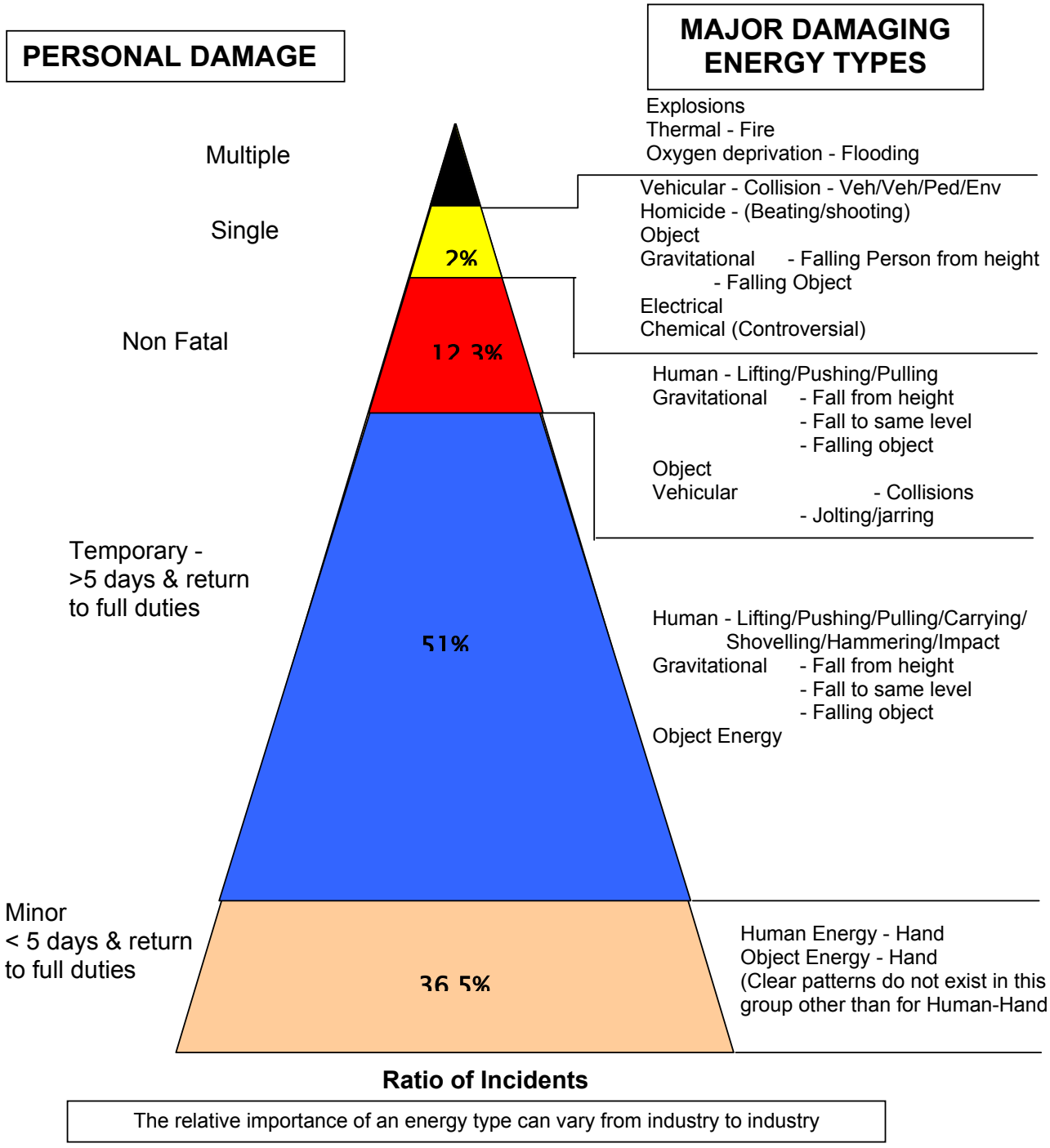


Figure 1

We infer characteristics of the differing categories of personal damage based on our experience and exposure to the more frequent events. However, pattern analysis of multiple fatality, single fatality and non-fatal permanent damage shows that the patterns are similar but yet significantly different. Further, our own research indicates that the pattern of temporary and minor damage are not only different from each other but also from the permanent categories. The following triangle (**Figure 5**) is based on energies which damage people demonstrates this.

"ENERGY" IN FOCUS



The relative importance of an energy type can vary from industry to industry

Data Sources:

- New South Wales Workers' Compensation Statistical Bulletin, 1995/96
- WorkSafe Australia – The Cost of Work-related Injury and Disease, 1994
- WorkSafe Australia – Estimates of National Occupational Health and Safety Statistics,
- Dept of Minerals & Energy (W.A.) – Fatal and Lost Time Injuries in Western Australian Mines 1995
- U.S. Dept of Labor – Fatal Workplace Injuries in 1994: A Collection of Data and Analysis, 1996.
- Industry Commission Report No. 47 – Work, Health and Safety, 1995
- Pitzer, C.J., – The Links Between Organisational Human & Engineering Error in Conference papers

Beneath both triangles is another group, sometimes called "near-miss" or "near hit". This group consists of non-reported and reported data. Pattern analysis of the reported pattern of near-misses is again different to the pattern in the various damaging categories which says a great deal about people's perception of that phenomenon which produces damage. There is a large store of knowledge within a workforce with respect to exposures that remain unreported. When this information is collected, using Focus Groups, and a pattern analysis completed, the pattern of non-reported near-misses begins to reflect non-fatal permanent damage and single fatality patterns. Is this because the perception of people who have exposure to that which does damage permanently do not understand the exposure or its consequences? Is it that they subconsciously reduce the perception of a possible severe negative outcome so that the work environment remains psychologically tenable? Hans Selye[4] accurately described this phenomenon in the General Adaptation Syndrome.

Why is it that when a person in industry, for example, nearly falls down a stairway and recovers that they go on with life and yet the injury pattern for stairways is clearly revealed in papers such that by Cohen[5].

> *Nearly 40 years ago in the United States, falls were the leading cause of non-motor-vehicle-related accident deaths. Falls on stairways accounted for one-third of those accidents. In fact, the U.S. Consumer Product Safety Commission estimated that nearly one million stairway injury incidents occurred in 1990 (Bennett, 1993). The National Safety Council (1997) reported that in 1996, there were 8200 deaths resulting from stairway falls from one level to another or on the same level. It is also estimated that stairway injuries cost the American public $10-$12 billion a year in lost wages, disability compensation, and health care (Bennett, 1993; Pauls, 1998)*

We have to reorientate our filter and in a sense picture that we are dealing with polarised light and allow the necessary information to be received, processed and noted. We are in danger of having inappropriate filters which create a world view that will hinder progress eg a perception which says "a serious accident is simply a chance variation of a minor accident". The "logical" conclusion then follows - let's examine "minor incidents".

The majority of personal damage, when measured not as numbers of people but as cost, impairment, disability etc, arises from those few people who have received non-fatal permanent damage and that group needs to be identified, described, classified and the incident factors analysed.

It is also necessary to understand and describe the possible Top Down processes that then affect our final percept, even though we may be appropriately focussed on the correct category of damage. What is your perceptual framework for organising information about people involved in incidents? Is it on some strange notion that 88% of incidents are caused by human error, 10% by machine design and 2% by God (due to some theological nonsensical interpretation)? That ratio may become modified to 88% and 12% or some other ratio that reflects the most recent studies completed? Are the words used to describe the factors involved in an incident couched in terms of 'unsafe' (acts and conditions), 'carelessness', 'carefulness', 'hazard', 'error' or 'cause'? Again, any introspective assessment will realise that to call an observation 'unsafe' requires that that observation be weighed and compared with our own internal values continuum. We recognise that within

the group in this auditorium we come from different cultures, different industries and different backgrounds and our perception of 'unsafe' will be different one to another. Therefore, why do we use a Top Down process that requires observations to be judged against internal values? Have you ever interviewed a person involved in an incident and observed the distorted, reduced and emotionally charged flow of information when you ask the question "Well, Fred, what caused the accident? Please describe to me the unsafe acts and errors."

In our strongly rational logic neo cortex driven world, our humanity prevents us from moving to scientific objective statements about incidents. We fail to make statements that the only correct ratio that applies to incidents are that on 100% of occasions; 100% of issues are to do with behaviour, 100% of issues are to do with equipment design and 100% with environmental features. Why cannot we express our observations in objective terms of 'what did people do?', 'what did they not do?', what features of equipment or the environment had to be "present" or "absent" to allow this situation to follow its progression to a damaging outcome?'.

Therefore, our models which form part of our Top Down processes have to be challenged. Our understanding of personal damage has to be challenged so that we have opportunity to perceive the problem from a perspective of its usefulness to achieving what? THE VISION. But what is a Vision? It is not written; hence it cannot be discussed with passion, that is strong feeling. What role does imagination play in taking us from our perception to a Vision?

III. Imagination

Gravitational Energy damages people. Falls to the same level often involve loss of grip at heel strike for those people permanently damaged. The solutions are known even though we debate at length how to measure friction.

Falls on stairs are multi-factorial but factors which appear often relate to -

(a) dimensional variation of stair tread noses;
(b) hand rail design, present or absent;
(c) the grip and visual characteristics of tread noses;
(d) lighting quality and quantity and direction.

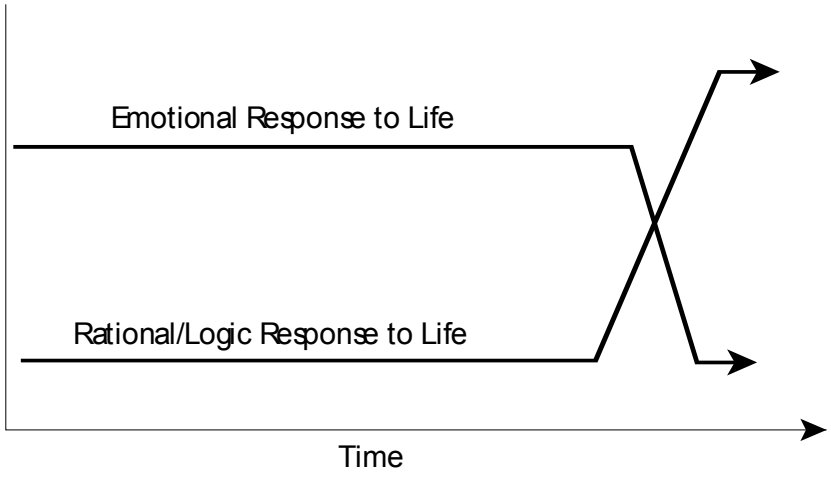
Falls from fixed access systems are a significant source of personal permanent damage. Ladders form a sub category yet we in Australia still produce ladders that contain signage instructing people not to climb to the top platform but then provide them with the necessary treads to allow people to achieve their desired goal.

Mobile equipment is frequently involved in personal damage. For example, truck trays are a work platform for part of their life and yet the solution to people working on the back of stationary flat-bed trailers is often seen in terms of 'increase people's height awareness' and

not in terms of edge protection, travel restrict systems or fall arrest systems. And so the story goes on with respect to roofs, mobile access systems etc. Why does the problem continue?

The solution to any of the above described categories of personal damage is not an absence of technology. Does the problem continue because we do not know how to implement management systems with defined accountabilities, time frames, goals and objectives. Does the problem continue because people do not have the necessary skills to install design changes, design equipment changes, seek out information etc? Is the problem associated with an absence of legislation and Codes of Practice which increase year by year within our country?

It is suggested that what is missing are leaders who are stirred in their imagination and emotions to believe that this problem is resolvable. People with strong feelings, people who are motivated by a cause greater than themselves, people whose perception of the problem is determined, at least, by the most useful models applied to the most significant damaging categories. When one reads the text by Goleman[2] on emotional intelligence the following **Figure 6** would tend to indicate that in the last 5-10 generations our responses to life in our Western societies have shown a huge shift from an emotional response to a rational/logic response. It is suggested that in our Western society we have become increasingly rational/logic to the detriment of our emotions, even though such statement could never be applied universally. When we encounter emotional people, people with strong feelings, it can create responses in us that range from fear to awe, but we need to bring that emotional dimension to this problem of personal damage and couple it with a rational/logic scientific approach. The imagination must be stirred to believe that this gravitational problem is completely resolvable.



IV. The Vision - What is Possible?

Sailors used to plot their course by the stars. They knew that they could never reach the stars but lifting their eyes heavenward, they took their eyes off their immediate circumstances and they could determine their pathway. Without the stars there was no course. Do we allow ourselves to look to the heavens for a statement of where we could be both for this

organisation i.e. the ISFP and our own corporate associations? Do we believe for a world where, as stated by McDonald[1], "*work enhances the quality of the life for those who work there and those who come into contact with the people who work there*"? Do we have a vision based on the elimination of a negative e.g. to see society free from permanent damage arising from Gravity as an energy source? Or do we express it as a positive - a society in which Gravity is so managed as to enhance the quality of life?

Whichever way it is expressed, I would suggest that we need a VISION and we need leaders at various levels of our society to produce that vision. People in leadership need to articulate the VISION; why it is held and and what the VISION could "look like" when it becomes reality. That VISION needs to be communicated compassionately, compellingly and emotionally. The leaders need to be people who can become righteously angry at yet another family whose lives are tragically transformed by a person falling from a drill while refuelling and sustains major lumbar spine damage.

V. Why a Vision?

Vision releases energy.

Vision empowers.

Vision is essential to action.

Whether you are Christian or non-Christian, to read the book of Nehemia in the Old Testament[6] will show what is possible. He was a man who believed that Jerusalem could be rebuilt. He was inspired at the level of his spirt by the Spirit of God. Where the Vision existed, the imagination of others became fired. Where the Vision existed, it resulted in appropriate and effective strategies.

The Vision will create pain but what is pain other than the outworking of weaknesses in our lives? Vision will create problems but we are encouraged to see them as opportunities. Who here can dare to believe that a workplace can be free from permanent damage involving Gravitational Energy? Dare to believe!

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1 McDonald, G.L., **Magic and Ergonomics - The Vision for Safety**, Paper presented at Ergo Week 1999, Ergonomics Society of Australia, Queensland. 1999

2 Goleman, D., **Emotional Intelligence - Why it can matter more than IQ**, Bloomsbury Publishing Plc, London, 1995.

3 Haddock, C., **Managing Risks in Outdoor Activities**, New Zealand Mountain Safety Council Inc., 1993.

4 Selye, H., **Stress Without Distress**, Corgi Books, 1974.

5 Cohen, H.H., **A Field Study of Stair Descent**, *J. Ergonomics in Design*, Spring 2000 pp 11_15

6 The Bible